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U. S. Department of Health, Education, and Welfare

PUBLIC HEALTH SERVICE

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PROGRAM PLANS AND REPORT

of the

NATIONAL LIBRARY OF MEDICINE

SCIENTIFIC AND TECHNICAL COMMUNICATION ACTIVITIES

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U.S. NATIONAL LIBRARY OF MEDICINE

REPORT ON SCIENTIFIC AND TECHNICAL COMMUNICATIONS

Summary of Proposals for Action

General

The crisis in scientific communications has three principal components:

1. The extraordinary growth of the literature,

2. The differences in types of requirements related to the rapid growth of multidisciplinary and interdisciplinary biomedical research; and

3. The requirement for increased speed, effectiveness, and efficiency in the production, storage, retrieval, and dissemination of biomedical information.

To help materially toward meeting these needs on a national basis, the National Library of Medicine is proposing programs in seven particular areas. (1) biomedical scientific publications; (2) Library Fellows; (3) international communications program; (4) medical library support, including resources and education and training; (5) research and development in medical communications; (6) MEDLARS search centers; and (7) medical library extension. The Library proposes carrying out these programs with both contracts and grants. The Library already has authority to award contracts and has made several of significance in the communications field during 1962. New authorities are needed in order for NLM to carry out these programs through the medium of grants.

The proposed programs would be extensions of the Library's extensive, current activities. These activities are described in appendix "A."

An effective biomedical communications system requires provision of physical and bibliographic access to the literature with the greatest possible speed, accuracy, and completeness. There are about 250,000 journal articles produced every year around the world in the biomedical literature in 30 or more languages. A large proportion of these appear in the Index Medicus. But it is obvious that an index alone, however fundamental to other communications activity, is not enough. In the increasing complexity and interrelatedness of biomedical research and its literature, additional activities must be undertaken to give scientists and practitioners the data they need quickly and efficiently. These activities should include efforts to strengthen existing publication media, they should include attempts to revitalize and coordinate efforts in analysis and resynthesis of research findings, as in critical reviews, bibliographies, and compendia; they must include strengthening the manpower and resources of the nation's medical libraries. There also must be increases and improvements in the research and

development of new and/or nonconventional communications processes, including mechanical aids.

The programs discussed in subsequent pages have been designed by NLM to challenge those aspects of the national biomedical communications problem which would seem to come under the purview of the NLM charter and permit proper exercise of the Library's experience and skills gained over the past 126 years. Therefore these proposals necessarily are limited to printed-word communication, and all of the processes of training and research and development that go into the production, storage, retrieval, and dissemination of printed documents; they do not include equally important communications processes involving films, conferences, television, and other media.

I. Biomedical Scientific Publications Program

In recent years there has been an occasional tendency to try to characterize the biomedical publications problem as "too many articles or too many publications" for the users of biomedical data to cope with. This idea is unsound and unrealistic. The biomedical literature necessarily will continue to grow; there are many areas which require additional publication attention. The most critical problems are to see to the proper distribution of biomedical material, and to improve the systems necessary to gain access to and use this information. Neither of these problems is insurmountable; it is only necessary that the effort behind the development of new approaches equal or surpass the efforts made to strengthen traditional approaches.

Program No. 1

The Library proposes to design and activate what would be the first coordinated PHS grant program specifically in the field of scientific publications and related areas.

Biomedical scientific publications traditionally are classified as "primary" or "secondary," the first referring to original publications and the second referring to publications which provide for the analysis and reuse of primary publications.

(a) Primary Publications

At the present time and probably for the foreseeable future the professional journal is the principal outlet for original writings. The nature and quantity of professional journals pose numerous difficulties, and while in the future it may be desirable to see the journal system replaced, it is meanwhile essential to assist journals in overcoming their present problems. The Library's publications grant program would seek to do this. The program would also seek to design and test experimental forms for the primary dissemination of research information.

(b) Secondary Publications

Secondary publications are the essential keys for students, teachers, scientists and medical practitioners in gaining access to and utilizing biomedical information. Secondary publications constitute a field much broader than primary publications; it is a vast field in terms of the number and types of projects which might be undertaken to assist in the speedy use of the literature.

Abstracting and indexing are fundamental control processes on which other types of secondary publications may be built. Emphasis should be given to bibliographies and critical reviews, and to data compendia and handbooks.

The need for research in secondary publications is crucial. New concepts and new procedures need to be developed to assist in arraying the literature so the user can have greater success in finding what it is he wants in more or less the form he wants, and in an acceptable span of time.

In secondary publications the objectives of the NLM program would be to:

Strengthen existing media for the analysis and resynthesis of biomedical data in abstracts, indexes, critical reviews, bibliographies, translations, etc.;

Coordinate and relate such activities in the interest of scientific needs and economic considerations; and

Promote new and experimental forms of secondary publication.

II. Library Fellows

Advances in medical research occur in many fragmented units representing individual contributions to a large number of problems from many disciplines and are reported to other research scientists in thousands of individual publications. The integration of new knowledge and the updating and reinterpretations of the past are essential to further progress in any field of specialization and particularly in consideration of the importance of cross-fertilization in the unprecedented use by the sciences of the literature of other disciplines.

By the fact that NLM systematically receives, indexes, and stores the literature of the medical sciences in all languages and of all time, it makes a tremendous contribution to this process. But its work should be supplemented by the addition of a vigorous program of reinterpretations by experts.

Program No. 2

The Library proposes a system of fellowships to permit qualified individuals to carry out extensive reinterpretation and publication projects in the more critical areas of biomedical research. This work would be carried out in part within the setting of NLM so that the vast resources of the Library in the literature and in skilled personnel would be immediately available. Senior scientists and scholars would be the principal recipients of fellowship awards.

III. International Communications Support Program

No country has a monopoly on scientific ability. Reports of significance to the advance of biomedical knowledge occur in a variety of languages. As the world shrinks, it becomes increasingly important for American scientists to stay abreast of advances made by their overseas colleagues and published in unfamiliar languages.

The essential problem in international communication is to identify the significant contributions early, for their rapid communication. This calls for selectivity at a high level of professional competence and for the use both within this country and abroad of professional editorial groups.

The present NLM Science Translation Program is serving as the principal PHS focus for providing access to the foreign literature in infrequently read languages.

In the past the program has concentrated on the Soviet biomedical literature. Needed is a broader base to give the American community access to the literature in other seldom read languages, such, for example, as Czech and Japanese.

Program No. 3

The NLM proposes the establishment of an international communications program to give the American biomedical community faster and more effective access to the significant literature in those foreign languages not commonly read in this country. The program would employ grants where undirected intellectual activities are preponderant (e.g., critical reviews), and the contract mechanism where NLM, on the basis of demonstrated needs, identified and specified the work to be done.

IV. Medical Library Support

Medical libraries are in the forefront of the task of providing the bulk of published biomedical data to medical students, teachers, research scientists, and practitioners. In the great majority of cases the requirements for

scientific information by individuals and institutions must be referred, directly or indirectly, to a medical library or several medical libraries. The medical library thus constitutes a central and essential mechanism around which other parts of the biomedical communication system revolves.

Despite the weight of this responsibility the medical school libraries have suffered in the competition for the academic dollar. Out of the total medical school budget the libraries receive only 1.5%, or a national total of $5,030,000 -- the same percentage as in 1951. In competition for the research dollar the medical school libraries have dropped from 4.1% in 1951 to 3.7% today. This has been during a period of enormous growth in biomedical research, and the tremendously increasing demands on the medical school libraries have put them into a very desperate position. There are gross and cumulated deficiencies in two main respects: resources and manpower.

To achieve a fairly definitive idea of the magnitude and nature of the national medical library problem, NLM provided a contract to Harvard University to study the matter, and the Harvard report is appendix "B" to this document.

A. Library Resources

The rate of production of new biomedical information is at an all time high. Medical researchers are demanding collections in depth in paramedical disciplines as a concomitant of the multidisciplinary revolution in the sciences. Institutional research in educational programs stresses the basic sciences which require library collections in historical depth. As a result the medical libraries are falling farther behind in their efforts to meet the contemporary medical research and education needs. The deficiencies are not limited to gaps in the collections of books and journals; they also include backlogs in cataloging and organizing materials for use; backlogs in binding programs; inadequate staffing of loan and interlibrary loan functions; and inadequate reference services.

Program No. 4(a)

NLM proposes to establish a program of matching institutional grants to rehabilitate medical school and research libraries. Present plans call for Federal support at the rate of up to 50% of the library's total budget for the previous year. Subject to the appropriation of funds by the Congress the grants would be renewable yearly up to a maximum of five years. The Federal contribution would be spent at the discretion of the medical school but in specified areas of library resources.

B. Education and Training

Medical Library manpower needs fall into two basic categories: first, the need for professional medical librarians; and second, the need for training in broad areas of medical communications and information processing technology.

Thus not only are more librarians required but the skills of currently employed medical librarians need updating.

Program No. 4(b)

The Library proposes a composite training program of grants including the following elements:

(1) Long-term traineeships leading to academic degrees at the Masters and Doctorate levels.

(2) Short-term traineeships providing for intensive training or retraining, at accredited degree-granting institutions, designed to improve the skills of currently employed librarians.

(3) Training grants to appropriate institutions to expand and improve their library training facilities by strengthening their teaching staffs and encouraging them to establish specialized courses.

(4) Support of post-Masters or Doctoral degree internship programs in established and qualified medical libraries.

The same general types of programs would be undertaken for the training of professional personnel in information processing technologies, with particular reference to the support of short-term academic institutes.

V. Research and Development in Medical Communications

A major objective of agencies concerned with the problems of scientific communication has been to explore and develop new devices to replace elements of the traditional systems. Attacks on these problems have been made in fields of machine storage and retrieval, machine translation, auto-abstracting, computer-based indexing, facsimile transmission, and many others.

Success has been limited. A fundamental reason has been a general ignorance of the characteristics, functional relationships, purposes and objectives of the naturally evolved practices. The technologies evolved have outstripped theory; there is no common agreement among scientists as to guidance that should be given to the engineers. Since the problem essentially is one of information logistics, involving close controls of units of information to insure their motility from place to place and from time to time, the problem constitutes a complex more susceptible to operations research procedures than to the engineer's drafting board.

Program No. 5

NLM proposes the establishment of a program of grants (to augment limited work already underway under contracts) to support studies

seeking to describe and quantify the functions and activities which make up natural communications systems. Where a base in theory exists, or where the need is patent, the grant program would provide support for the development of special purpose solutions, including mechanization. The program would be concerned with the testing of nonconventional solutions under controlled conditions, and to this end necessarily would support demonstration projects.

VI. MEDLARS Search Centers

A. Background

The NLM some years ago became interested in mechanized procedures which could assist in the task of indexing the world's biomedical literature. Currently a partially mechanized system exists at NLM for its monthly and annual production of Index Medicus. Limitations of the mechanized, rather than human, aspects of this work have prompted the Library to investigate various electronic computer methods to speed the task of indexing biomedical articles and to respond to the many other needs growing out of the question: "What publications exist that are directly pertinent to the subject of my inquiry?"

Following extensive studies of 25 proposals by various American firms, NLM awarded a contract to the General Electric Company for the development of MEDLARS, which stands for Medical Literature Analysis and Retrieval System. At the heart of MEDLARS will be a digital computer. Information will be fed into the system through punched paper tape, representing the indexing done by the Library's staff. This information will be converted to magnetic tape and manipulated in the computer. A magnetic tape so processed will be used to activate a high speed composing device capable of producing photographic masters for printing.

Three types of products will be derived from MEDLARS. First, it will provide increased high speed composition capacity for the production of Index Medicus. Second, it will provide recurring bibliographic listings of references selected in accordance with the predetermined requirements of particular research fields. For example, it will supply a weekly listing of the world's medical literature on one or more cardiovascular problems. MEDLARS will be capable of turning out 50 such recurring bibliographies of varying periodicity. Third, it will provide search and retrieval capacity to answer demand queries from individual research installations concerning newly published information bearing on their immediate problems. It will be able to accept up to 90 complex demand search questions on a daily basis.

The input for MEDLARS will begin in January 1963 and it is expected that the system will be operational by September 1963. In its first year of operation MEDLARS will contain 180,000 references. This will increase by annual increments to the point where more than a million references will be stored on magnetic tape for searching. When MEDLARS is completed the biomedical sciences in the U. S. will have access to a powerful bibliographic search tool equaled by none in the world.

B. Decentralized Search Centers

The Library is devoting considerable attention to extending and developing the unique capabilities of MEDLARS into a national system for the management and retrieval of published biomedical information. Such an expansion will be necessary to meet large service demands and to consider such factors as time and place values in making the MEDLARS potential directly responsive to local research requirements.

At this stage of NLM's study of the problem it seems feasible and desirable to conduct a demonstration program by establishing additional centers which could use the tapes produced by the parent MEDLARS at NLM.

Program No. 6

The Library proposes a program for the development and testing of MEDLARS search centers. This program logically divides into three stages. First, the collection of data on workloads, characteristics and cost factors from a single satellite installation. Second, decentralization in a pattern of five regional search centers, each of which will serve a metropolitan research community. Third, the development of the necessary mechanisms for the establishment of 50 or more MEDLARS search centers in local research communities, such as universities.

VII. Medical Library Extension

Access to medical literature is grossly inadequate to the needs of rural and small town physicians who can personally subscribe to but a handful of journals. The American Medical Association, the American Nurses Association, and the American College of Surgeons formerly provided their memberships, wherever located, with a "package library service." Within the last three years these services have been discontinued. Only three state associations maintain medical libraries. Eight states have formal or informal agreements, usually with a university school of medicine, but usually without compensation, to provide library services to their members.

Libraries of state schools of medicine working independently or in agreement with state medical societies have attempted in several instances to provide state-wide medical library extension services, including the loan of book and journal materials, and the answering of reference questions. However, such libraries lack the resources to undertake more than token services.

Program No. 7

The Library proposes a program of strengthening the medical library extension services offered by the libraries of university schools of medicine, thereby enabling them to provide better loan and reference services for the benefit of the total professional populations

of the states. Initially such support would be undertaken through the staging of a small number of three-year demonstrations at an annual cost of approximately $35,000 each. Assuming these demonstrations to be effective, the Library would propose programming support for more such extension services through some form of matching grant in which state agencies, public and private, would be involved.

CURRENT PROGRAMS OF THE NATIONAL LIBRARY OF MEDICINE

Mission and Functions

The National Library of Medicine's mission is summarized in the language of the Act establishing it -- "to aid the dissemination and exchange of scientific and other information." As the Library's name indicates, the mission is national in scope, and is not limited to support of Public Health Service operations or those of the Federal Government, although the NLM functions as a member of the PHS team, and acts in an advisory capacity in areas of its competence. The primary audience of the Library is the membership of the health professions in the United States.

Being a library, NLM is interested almost exclusively in the printed word, the published record, and in those problems auxiliary to its effective transmission, as technological developments in communication practice, personnel training, and resource requirements of the national medical library network in which NLM stands as a central focus.

The activities of the Library are carried out by five operating divisions. These are 1) the Technical Services Division, which performs the function of acquiring and cataloging the output of the world medical press; 2) the Bibliographic Services Division, which prepares the major bibliographic search tools which the Library has been publishing, in one form or another, for almost a century; 3) the Reference Services Division, which is responsible for providing services to readers who visit the Library and for filling the large number of requests for interlibrary loans received; 4) the History of Medicine Division, which has custody of the great historical collection of books, manuscripts, and prints; and 5) the Office of the Director, which has as its main subdivisions a) Administrative Services, under the Library's Executive Officer, and b) the Extramural Program, under the cognizance of the Library's Deputy Director.

The overall management and policy guidance of the Library is subject to the scrutiny and review of the NLM Board of Regents, advisory to the Surgeon General. The Board consists of 7 ex-officio members, including the four Surgeons General of the uniformed forces, the Medical Director of the Veterans Administration, an Assistant Director of the National Science Foundation, and the Librarian of Congress, and 10 members appointed by the President, for terms of four years each, chosen from persons prominent in the various fields of medicine.

As a national institution, the Library for years has conducted its programs with two general objectives: first, the provision of bibliographic access to the literature of medicine; and second, the provision of physical access to the literature of medicine.

Bibliographic access embraces the areas of cataloging, indexing, and bibliographical listing, and the publication and dissemination of the resulting products. It responds to the question "What materials exist that are

directly pertinent to the subject of my inquiry?" The nature of the problems of bibliographic access and the means available for their solution lend themselves readily to centralization. This is what the Library is attempting to do -- to compile centrally, and distribute widely, the bibliographic record of medicine, so that all members of the health professions, wherever they may be, may have knowledge of what of interest to them is appearing in the world literature.

Physical access embraces the area of acquisitions, at one end of the line, and as a representative area at the other end, the provision of interlibrary loans. Only a universal acquisition program such as NLM's can at once provide the base for a universal bibliographic record, and at the same time provide the rich and broad store of materials on which lesser libraries may rely for the provision of works which lie on the more exotic side. Provisions for physical access respond to the question "How can I put my hands on these items known to be pertinent?" Here the problem can be suitably fitted only to a decentralized arrangement of facilities. The fundamental characteristic of the printing press is that it provides multiple copies, which may be stored in multiple locations, convenient to the needs of users spread over wide geographical areas. The interlibrary loan program of the Library, enormous as it is, can properly be conceived of as a central facility which functions only as a very necessary supplement to the basic decentralized stores of the medical library network.

I. BIBLIOGRAPHIC ACCESS

Ever since 1876, when Dr. John Shaw Billings published his Specimen Fasciculus of an Index-Catalogue of the National Medical Library, the Library has pre-empted the responsibility on behalf of all countries of preparing, publishing and distributing the international bibliographic record of the medical sciences. The Index-Catalogue of the Library of the Surgeon General's Office (1880-1961), the original Index Medicus (1879-1926), the Current List of Medical Literature (1942-60), and the new Index Medicus (1960-) are all heroic accomplishments which have, since the middle of the last century, provided the medical sciences with a better control over their published record than exists in any other scientific area. MEDLARS (see below) is the latest evidence of the Library's willingness to undertake the international responsibility of providing bibliographic access to the literature of medicine.

Index Medicus

The current effort is the Index Medicus. As a result of a two-year research and development effort, copy for the Index Medicus is now prepared for printer using a triad of automated procedures: Justowriter for typography, IBM equipment for sorting and merging, and Listomatic camera for rapid-fire photographic composition.

In FY 1962 the Library indexed over 150,000 medical articles from 1,900 journals, and these citations appeared on an average of 5 times each in the Index Medicus, under multiple subject and author rubrics. The publication appears monthly, and the print order is 7,500 copies. Approximately 900 copies are distributed free to Federal medical installations; another 900

copies are used for exchange purposes, i.e., to insure receipt of foreign publications; the balance of the copies are subscribed to through the Superintendent of Documents at a price of $20 per year. The Library invests about 20% of its manpower and 20% of its funds into this one operation.

Bibliography of Medical Reviews

As a byproduct of the Index Medicus, for the past 6 years the Library has published an annual listing of the review literature of medicine, the Bibliography of Medical Reviews. The volume published in 1962 was a cumulative volume, and contained some 20,000 subject entries.

The Bibliography of Medical Reviews provides access to the review papers which synthesize new findings on research topics.

National Library of Medicine Catalog

Listing of the current production of medical books (or monographs) from all countries is an integral part of the published record of medicine. To provide bibliographic access for this voluminous literature, the Library publishes its National Library of Medicine Catalog.

This compilation has been published annually since 1949, and has been cumulated at five-year intervals. It represents the record of books and journals which are cataloged in the Library. The volume for calendar year 1961 contained entries for 20,260 works in 32 languages. It is published for NLM by the Library of Congress, and sells for $20 a copy.

Cataloging

The NLM Catalog, which establishes this annual bibliography of medicine, is compiled from the Library's daily cataloging operations which produce authoritative catalog cards, complete with classification rubrics, and tracings of the subject headings used.

These cards represent a bibliographical standard, which is followed by many other medical libraries in organizing their collections. The form of entry, definitive description, subject headings, etc. are directly used by other libraries, thereby saving them many thousands of dollars.

Last year the Library issued catalog cards for 11,719 new titles, and for 5,538 recataloged titles, making a total of 17,257. These current records of medical publications are continuations of a long standing record.

Index-Catalogue

In 1880 John Shaw Billings began publication of his mammoth Index-Catalogue of the Library. The decision to bring this compilation to an end was reached in 1950; the Library publications noted above were conceived as its successors. The last two volumes of the Index-Catalogue, volumes 60 and 61, were published in FY 1962. Altogether, the 61 volumes of this work organize some 5,000,000 references to the literature of medicine accumulated during the five centuries since the invention of printing.

Biomedical Serials, 1950-1960

There is much statistical confusion concerning the volume of the journal literature of medicine. The Library published a definitive work on this subject in 1962 which should serve as a baseline for calculating the growth and death rates of the world population of medical journals. Working with its files of 18,500 current serial titles received, eliminating all varieties which did not contain contributions of original papers, the Library published a 503-page list of current medical journal titles: Biomedical Serials, 1950-1960.

This work lists titles and holdings information on 8,900 substantive serials received by the Library during the decade, 5,711 of which were actively received at the end of the period. It has been widely hailed by medical librarians everywhere as an essential tool.

Early American Medical Imprints

In keeping with its long standing tradition of support for humanistic study in the medical sciences, the Library published last year Robert A. Austin's Early American Medical Imprints. This publication, based on the Library's collections may well set a standard for medical Americana.

It records 2,105 medical works printed in the United States between the years 1668 and 1820, and the several libraries in which copies are held.

Bibliographies

The Library has an established series of special bibliographies, organizing the literature on topics of current interest. Psychopharmaca (1958) and Salmonella; Salmonella Infections (1960) are earlier examples. Last year the Library published Toxoplasmosis (1961), a bibliography covering western literature between 1950-1960 and Russian Surgical Staplers (1961), containing 120 abstracts of Russian journal articles on stapling devices and suturing techniques.

It is anticipated that the computer facility of MEDLARS, described below, will greatly increase the Library's ability to prepare bibliographies on research subjects in which there is strong current interest.

MEDLARS

The Library's newest contribution, one with tremendous significance not only for medical bibliography, but also for computer technology and the printing industry as well, is MEDLARS.

MEDLARS stands for Medical Literature Analysis and Retrieval System. At the heart of MEDLARS will be a digital computer. Information will be fed into the system through punched paper tape, representing the indexing done by the Library staff. This information is converted to magnetic tape and manipulated in the computer. The magnetic tape so processed is used

to activate a very high-speed composing device capable of producing photographic masters for printing. Three types of products will be derived from MEDLARS. First, it will provide increased high-speed composition capacity for the production of the Index Medicus. Second, it will provide recurring bibliographic listings of references selected in accordance with the predetermined requirements of particular research fields; for example, it will supply a weekly listing of the world's medical literature on cardiovascular disease to that research group for its dissemination. Third, it will provide search and retrieval capacity to answer on demand queries from individual research installations concerning newly published information bearing on their immediate problems. In its first year of operation, MEDLARS will contain 180,000 references; this will increase by annual increments up to the point where over a million references will be stored on magnetic tape for searching. MEDLARS will turn out 50 recurring bibliographies of varying periodicity, and it will accept up to 90 complex demand search questions daily. On successful completion of this project, scheduled for the fall of 1963, the medical sciences in the United States will have access to a powerful bibliographic search tool equaled by none in the world.

II. PHYSICAL ACCESS

The Collections

Since the 1860's, the Library has been engaged in collecting the literature of medicine on a global scale. This means all medical writing, from all countries, and of all times. Currently it operates under a formalized "scope and coverage policy," which surveys in terms of a general classification the entire domain of human knowledge, and establishes four levels of library collecting: 1) exhaustive (in the medical sciences), 2) research (in the basic supportive sciences), 3) reference (in pertinent and related areas), and 4) skeletal (in fringe areas). This attempt to rationalize the medico-centric universe of the world's literature is unique, and results in a planned and controlled expansion of the Library's collections.

The NLM constitutes the largest assemblage of medical literature in the world. As of July 1, 1962, this collection totals 1,084,256 units including 1,009,228 books, journals, theses, and pamphlets. The collection is a national resource of great extent and depth.

By law, it is accessible to researchers and scholars for use. This use takes two principal forms: 1) consultation and reference; 2) interlibrary loans, accomplished mainly through photoduplication.

Consultation and Reference

The number of researchers using the Library in person has never been great. Principal among these are scientists and scholars engaged in the writing of books, review papers, historical treatises and the like. A phenomenon of recent years has been the systematic use by teams of researchers; for example the Surgeon General's Committee on Smoking and Health is currently quartered in the Library. Other agencies establish continuing work groups for the purpose of reviewing and monitoring the literature bearing on research topics.

The Reference Section answered 10,242 requests received by letter, telephone, and presented in person during 1962. The bulk of this load originates from a service population outside the Library rather than from the Library's visitors.

Photoduplication

The NLM, as a national research library, is a library of record; that is, it acts to preserve the cumulative publication of time past for the future. As such, it has provided physical access to the literature for generations of scientists and scholars, and will continue to serve their needs for generations to come. The practical implications of this function are that, as a reference library for consultation, the Library must be concerned with the preservation of materials.

This mission would seem to run counter to a second desideratum, that of making its unique collections available to scientists and scholars who cannot visit Bethesda. The dilemma has been solved by photoduplication, and the Library conducts one of the largest microfilming operations in the Federal Government.

A series of principles and policies have evolved which guide the provision of photoduplication services. First, the Library does not lend to individuals; to do so would court exploitation by reprint-hungry collectors. Second, the Library lends only to other libraries. The purpose is first, to deal with responsible agencies operating under a common code of practice; and second, to reinforce and not compete with local medical library development. The local institution is expected to meet local needs from its own collection; if this collection is deficient, it turns to the National Library of Medicine. NLM tends to discourage requests for common journals to persuade local libraries to acquire them. Third, the service is without charge. The transaction is a loan between libraries, and NLM has determined that it is more economical to film individual articles and to supply paper copy than it is to lend the bound journal volume, which by the act of loan becomes unavailable to others. Using six mobile cameras, which roam the book stacks, and a Copyflo continuous xerographic printer capable of producing 40 feet of paper print a minute, the Library provides physical access to its collection.

In FY 1962 NLM responded to over 125,000 requests for interlibrary loan. Of these, more than 108,000 requests were filled by providing photoduplicates of the requested material. This amounts to the filling of such requests at the rate of almost one per minute for every minute of every working day throughout the year. Through this mechanism, some 2,000 libraries around the world received 2,244,000 pages of material (up 8% over the previous year). One in eight of these "loans" went to libraries overseas to whom the NLM represents a primary international resource. About 12% of the Library's funds are committed to this single activity.

III. EXTRAMURAL PROGRAMS

The Library's Extramural Programs would reinforce both functions, that of bibliographic access and that of physical access, but through agencies and institutions outside the Library's walls.

Under existing authorities and appropriations, the only activity currently conducted is a program to strengthen channels of international communication to the benefit of American scientists: the Science Translation Program.

Science Translation Program

The Science Translation Program serves as a principal focus within the PHS for meeting the needs of the American medical research community for access to the reports of foreign medical research published in infrequently read languages. It is therefore broadly oriented to the improvement of international communication in the biomedical sciences at the research level.

While the translation of research papers, monographs, and journals is a principal activity, the Program is concerned with strengthening of related practices of value in international communication: the preparation of review papers; the provision of abstracts of the foreign literature; and the provision of various devices such as directories and dictionaries which may make foreign research reports more readily available to American scientists.

In doing so, it draws sharp lines between those functions which may have value to the intelligence community engaged in estimating total foreign potentials, and those functions which advance basic scientific knowledge toward the solution of biomedical research problems.

By historical accident, the Program concentrated on communication activities related to the Soviet biomedical literature; it is currently seeking a broader base. The Program will be concerned with meeting the needs of American researchers for significant new information published in languages read by small percentages of American scientists. Thus, it will be concerned with the Japanese or the Czech literature, as well as the Soviet.

The Program operates in cooperation with responsible research societies and groups, within and outside the Service, and delegates insofar as possible the determination of specific needs of the research community to such groups.

The Program has two sub-programs. It conducts, through grants and contracts support of domestic activities with appropriated dollars; and it conducts, in cooperation with the National Science Foundation, the Service's foreign currency communication program authorized under Section 104 k of Public Law 480.

The domestic program has concerned itself with projects under the following heads:

1. Translation of monographs
2. Cover-to-cover translation of journals
3. Provision of English language abstracts
4. Translation pools and announcements
5. Reference guides and directories
6. Review papers

Thus it has published a series of translations of Soviet research monographs; sponsored the English language publication of nine Soviet research journals; supported the publication by Excerpta Medica of Abstracts of Soviet Medicine, and provided assistance in this same area to Biological Abstracts; aided in the establishment of a national pool of science translations at the John Crerar Library, Chicago; published a Directory of Medical and Biological Research Institutes in the USSR and a Guide to Russian Medical Literature, and sponsored over 50 published review papers relating to research progress in the USSR.

The Library contracted with the Institute for Advancement of Medical Communication in August 1961, for the purpose of surveying the effectiveness of the Translation Program. The study attempted to measure the quality of Soviet research papers through parallel refereeing by American editors, and to estimate the use made of the translated material to date. The study confirmed judgments on failures of cover-to-cover journal translation as a communication device, and resulted in recasting the Program in a selective mold.

A contract with the Federation of American Societies for Experimental Biology established a comprehensive program for the selection by American editors of significant Soviet research papers, and their re-publication in translation in a new recurring supplement to Federation Proceedings. The screening of 5,000 abstracts annually will result in the translation of 800 papers, and the publication of 600 in the supplement starting January 1963.

The foreign currency translation program, authorized by PL 480, has been directly administered by the Library over the last five years. It has been conducted jointly, and in close cooperation with, the comparable program in the National Science Foundation, which by determination of the Bureau of the Budget budgets currently for all executive agencies with the exception of HEW.

It supports the translation of Soviet monographs in Israel, the translation of Polish works in Poland and Serbo-Croatian in Yugoslavia. A special feature is the use of these local currencies to encourage the initial publication of journals in English.

In practice, the NLM solicits suggestions for translation from both governmental and non-governmental research groups, using the Program to supplement, but not displace, its dollar-based domestic program. For example, it programmed for an agreement with the Ministry of Health, Poland, for the original publication in English (instead of Polish) of five Polish biomedical journals. NLM then places this requirement on NSF under the terms of the memorandum agreement; NSF requisitions the translation from the overseas contractor; NLM assists (if required) in providing adequate scientific editing for publication; the contractor publishes the translation, delivers 1,000 copies to OTS, who distributes 500 copies to NLM selected depository libraries, and maintains the balance of the stock for sale to individual American scientists.

IV. ADVISORY FUNCTIONS OF THE LIBRARY

By virtue of its mission and variegated programs in medical communication, the Library is inextricably involved in cooperative discussion and planning with a large number of scientific groups concerned with scientific documentation. For the last twenty years, with increasing intensity, it has been caught up in the onrush of science to put its information house in order.

Library staff, for example, participated in advisory and cooperative roles with the following selected groups in 1961/62:

Gordon Research Conference	Coordination of abstracting & indexing
Civil Service Commission	Program on automatic data processing in libraries
Armed Services Technical Information Agency	Evaluation of ASTIA thesaurus - revision of ASTIA
Pacific Science Congress (Sec. 10 -Scientific Information)	Biomedical library resources of the Pacific area
Aerospace Industries Assoc.	Thesaurus compatibility
PMA Literature Committee	MEDLARS future cooperation with PMA group
Advisory Committee on Automation for the Library of Congress	Comprehensive mechanization of Library of Congress
National Science Foundation - Science Information Council	National policy planning
PHS Mission to Polish Ministry of Health	Cooperative communication projects
International Seminar for medical Documentation and Statistics	Cooperative communication projects
Division of International Health Seminar on PL 480 Programs	Coordination PL 480 programs
Ad Hoc Interagency Study Group on Language Compatibility in Mechanized Storage and Retrieval Systems	Compatibility of thesauri in the sciences
American Documentation Institute	Published indexes
Division of Medical Sciences, NRC	Library's present and potential role in the improvement of medical communication

International Panel of the President's Committee on Mental Retardation	Bibliographical advice
Surgeon General's Conference	MEDLARS and library affairs
Mayo Foundation Lecture	Electronic devices and problem of storage and retrieval of medical literature
Conference of Biological Editors, New Orleans	Establishing CBE Committee on bibliographic standardization; study group on review papers; seminar with Latin American editors
U.S. National Committee on the International Federation of Documentation	International coordination
Advisory Committee on Computers in Research, Bethesda	Information storage and retrieval problems
President's Science Advisory Council Panel on Scientific Information, New York	NLM's programs related to information services
NFSAIS, Boston	Proposals for long-range development and coordination of scientific abstracting systems
American Standards Association Committee, Subcommittee on Transliteration	Standardization of Russian transliteration for science
Excerpta Medica Foundation, Amsterdam	International meeting on the modernization of medical documentation
Workshop Information Systems Design, UCLA Conference Center, Lake Arrowhead, California	Mechanization of libraries
Ninth Conference of Cardiovascular Training Grant Program Directors, Colorado Springs	Medical bibliography

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